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THE PAST HISTORY OF VULCANO.

BY

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GENERAL interest, not unaccompanied in some persons by astonishment, having been awakened by the sudden announcement of the very recent eruptions in the little island of Vulcano, on the northern coast of Sicily, I am induced to present here an outline of its past history, which shows that its volcanic character has been long established.

I must, at the same time, confess that this recent convulsion would have been more ably treated by our fellow-citizen, M. Henry de Saussure.

The Lipari, or Æolian, Islands form a group of seven large and twice as many small islands. All are of volcanic formation, and, taking them as a whole, they offer all the various stages of that formation. Some are quite extinct centres; in others the springs have remained warm, and the fissures, or *fumarole*, are still active vents, from which carbonic acid and steam are ejected; and in others, again, the *fumarole* yield a greater variety of products, such as sulphydric and sulphurous acid, boracic acid and hydro-chloride of ammonia. Stromboli, the most north-easterly of the group, is in a state of incessant activity, with explosions every ten or fifteen minutes; while its nearest neighbor has had, like most volcanoes, long periods of rest, broken from time to time by paroxysms of renewed energy.

This is now the case with Vulcano. In appearance this is the most forbidding of all the islands. With the exception of a few green patches of recent creation its surface is a mass of bare volcanic rocks of every possible hue, from deep black and vivid red to spotless white. Its steep shores are inaccessible on nearly all sides, and the sternness of its appearance is heightened by the contrast with the lovely green plantations and renowned vineyards of Lipari, which is but a mile beyond it. Vulcano has a superficial area of about 10 square miles, and, according to Fuchs, its highest ridges are 1338 feet above the sea, an elevation nearly equal to that of Stromboli. Notwithstanding its small size, it is geologically extremely interesting, and among its products are the volcanic brown enamel, or glass, called obsidian, pumice, and sulphur, both of old and of later formation, in great quantity; and, though of rare occurrence, boracic acid.

During the Middle Ages, Vulcano passed for an abode of the damned. St. Calogero, the Bishop of Lipari, having charitably banished thither all the fiends from his own bishopric, and forbidden the faithful, on pain of perdition, to approach the island.

Later it was occasionally visited by the more daring for the purpose of collecting a little sulphur and boracic acid, but for a long time the only permanent inhabitants were rabbits. Towards the end of the 18th century, when superstition began to lose some of its terrors, the Neapolitan Government settled two keepers in the place to look after the products. Subsequently, at a date which I have been unable to fix, an Englishman, or Scotchman, established himself in the island, and planted vineyards, built wine-cellars and a chemical factory and an elegant villa; but these works have all been destroyed and the tenants have abandoned the spot.

It is Herodotus (475 B. C.) who first mentions Vulcano, under the name of Hiera, as the vent of a subterranean forge of the god Hephœstus, or Vulcan.

Its first eruption is said by Aristotle to have occurred a century later. Other outbursts are mentioned by Strabo, Callias, and Diodorus. We learn from Eusebius that about A. D. 200, a small islet (afterward known as Vulcanello) rose from the bottom of the sea, close to the shore of the larger island, to which it has been united since the year 1550 by an isthmus, mainly composed of ashes. With all these evidences of activity there have been, nevertheless, long intervals of repose in the history of Vulcano. It was visited in the 17th century by an Italian monk, and, in the year 1727, by Dorville, a Dutchman, who was compelled by a sudden eruption to make a hasty retreat from the ridge of the crater. A more successful visit was made just thirty years after by William de Luc, of Geneva.

It was he who first descended into the crater; and to do this he let himself down through a cleft made by the rain in the vertical walls to the depth of 180 feet. Nearly choked by the offensive vapors, he reached the bottom, which was a mass of smoking *fumarole*, and crossed it in its whole diameter of 750 feet.

In 1775 there was an eruption, and the island was still in a disturbed condition when Dolomieu, the famous geologist, made his exploration in 1781. The crater was completely altered, and the depth was increased from the 180 feet measured by de Luc to more than 1300 feet, which brought the bottom to the level of the sea.

A descent into this gulf was out of the question. Stones dropped from above were received in two basins, which seemed to contain molten sulphur, and the sides of the abyss were coated with the same substance.

Spallanzani was the next observer. His first visit was made in 1788, two years after an eruption, which had so impressed the people that they tried to deter him from making the attempt. He found the crater partly choked up by slag and scoriæ, and yet hot enough to make him glad to step on the projecting masses, which afforded a relief from the burning heat that scorched the soles of his shoes.

He had to guard himself even more carefully against the vapors that issued from a swelling in the centre of the crater; and at night flames rose with the vapors.

From the time of Spallanzani's observations until 1873 and 1874 Vulcano was in the condition of a mere *solfatara*, a little more active than the one near Pozzuoli.

The eruptions which broke its long rest have been described by Prof. Mercalli and carefully studied by Mr. Picone, of Lipari, whose zeal for science has often led him into very serious dangers. The outbreak of 1873 began (like the one of the present year) with a fall of ashes as white as snow. This lasted for a few hours, the accumulation attaining a thickness, on a level, of about one and a half inches. Ink enough has been shed in discussing the origin of this shower to blacken the whole mass. Baltzer, a German naturalist who observed the crater from its edge, in 1874, estimated the depth at

282 feet, and Mr. Picone, in trying to ascertain the depth of the scoriaceous layer, had driven his rod through a bed of pumice, 23 feet thick, when it was suddenly ejected by the bursting out of a new *fumarola*. Other eruptions, principally of smoke and steam, occurred in 1879, 1882 and 1883.

Mr. Picone, who has frequently descended into the crater by night as well as by day, verifies Spallanzani's observation of pale flames issuing from the crevices and the *fumarole*; and he saw, as Dolomieu did, a little pool, 25 feet in length, of molten matter, that spouted up when stones were thrown into it.

The eruption of 1886 destroyed much valuable property, and the inhabitants of the northern part of the island abandoned the place.

Volcanoes are subjected to great alterations. Vulcano, for instance, has had three craters in activity at once, then one, then two, then one again. Its central summit is now formed of a high cone, rising from the middle of an older and lower one (just as Vesuvius rests on the Somma), and with a new smaller cone at the bottom of the present crater.

One feature alone is permanent: a large fissure called Maestro Rosario, held to be unfathomable, and the source of a constant and very powerful ejection of steam.

The fits of wrath of Vulcano being generally followed by long periods of repose, it may be expected that when its roaring voice is once more hushed, the island will again be settled by industrious colonists, heedless of the dangers that lurk in the future.

GENEVA, September, 1888.